

Abstract Submitted
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Correlation ECE and Doppler Backscattering Diagnostics for Alcator C-Mod¹ A.E. WHITE, A. HUBBARD, MIT PSFC, P. PHILLIPS, University of Texas, Austin, J. IRBY, M. GREENWALD, MIT PSFC, D.R. MIKKELSEN, PPPL, N.T. HOWARD, MIT PSFC — A Correlation Electron Cyclotron Emission (CECE) diagnostic and an X-mode reflectometer system are being developed to measure long wavelength ($k_{\theta}\rho_s$) core electron temperature fluctuations and density fluctuations, respectively, at Alcator C-Mod. These new diagnostics will allow for detailed two-field core turbulence measurements and validation studies. Adjustable optics will allow the reflectometer to be configured as a Doppler backscattering system. Global, nonlinear gyrokinetic turbulence simulations (GYRO) and synthetic diagnostics are used to model the diagnostics' expected responses to turbulence in a variety of operating regimes. The challenges associated with the high frequency systems required for core turbulence studies at C-Mod and the feasibility of combining these complementary diagnostics into a single transmission system will be assessed. Accessibility limits, expected wavenumber sensitivity and waveguide/antennae configurations are discussed.

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